

gale force nor low readings of barometer at sea did this storm equal the extratropical storm over northerly waters during the first days of July. Chart IX presents the situation on the 27th, when the tropical storm was near the central Bahamas. There was a minor disturbance just north of the Mona Passage on the 22d, but it does not appear to have advanced or to have caused more than a brief period of winds of gale force.

Waterspout.—Early on the afternoon of the 20th a waterspout was noted in upper New York Harbor, starting not far off shore from Stapleton, Staten Island. For a few minutes it seemed to remain practically stationary, then moved slowly toward the northeast. After about 10 minutes it disappeared very suddenly. The height was estimated as more than 1,500 feet by officers of the Coast Guard.

Fog.—July 1936, was marked by about the same amount of fog as the preceding month of June, except for an increase in prevalence within a strip, between 45° and 50°

north latitude, from Newfoundland eastward to a little beyond midocean.

Over the middle and western parts of the Grand Banks there was more than the normal July amount of fog. The region of greatest frequency, however, was in the square from 40° to 45° N., 65° to 70° W., which is adjacent to eastern New England and southern Nova Scotia. Here the reports indicate 19 days of fog.

From the vicinity of Nantucket southwestward to Chesapeake Bay there was less fog than normally occurs in July, there being scarcely any after the middle of the month.

Thick weather, due probably to dust from the African mainland, was reported south of the Canary Islands on the 9th.

On July 12 the steamships *Yarmouth* and *Losmar* collided in Boston Harbor during a fog, with considerable damage to each.

OCEAN GALES AND STORMS, JULY 1936

Vessel	Voyage		Position at time of lowest barometer		Gale began July	Time of lowest barometer July	Gale ended July	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Pres. Roosevelt, Am. S. S.	Cobh.....	New York.....	41 50 N.	51 04 W.	1	9a, 1.....	1	29.17	S.....	W, 11.....	N.....	W, 11.....	S-W-N.
Quaker City, Am. S. S.	Liverpool.....	Boston.....	50 20 N.	37 00 W.	2	8p, 1.....	3	29.17	S.....	S, 7.....	WNW.....	WSW, 9.....	S-WNW.
Tetela, Br. S. S.	Port Antonio.....	Liverpool.....	46 37 N.	34 20 W.	1	10p, 1.....	2	29.69	W.....	SSW, 8.....	WNW.....	SSW, 8.....	SSW-WNW.
Veendam, Du. S. S.	Rotterdam.....	New York.....	48 37 N.	35 34 W.	1	11p, 1.....	3	29.22	SSW.....	SSW, 8.....	NNW.....	SSW, 8.....	SSE-SSW-WNW.
Nairnbank, Br. M. S.	Colon.....	do.....	12 57 N.	77 54 W.	1	2a, 2.....	4	29.84	E.....	E, 8.....	E.....	E, 10.....	Steady.
Helmstrath, Br. S. S.	Swansea.....	Montreal.....	53 02 N.	45 30 W.	1	4a, 2.....	2	29.00	SW.....	SW, 4.....	N.....	N, 8.....	SW-N.
Badjestan, Br. S. S.	Newcastle.....	Sydney.....	56 18 N.	27 25 W.	3	2p, 2.....	4	28.94	NW.....	SW, 6.....	WNW.....	WNW, 8.....	SE-SW-W.
Sanyo Maru, Jap. M. S.	Cristobal.....	New York.....	10 36 N.	79 14 W.	5	7a, 5.....	6	29.74	ENE.....	NE, 5.....	ENE.....	ENE, 7.....	6 points to right.
Margaret, Am. S. S.	Jacksonville.....	San Juan.....	23 10 N.	69 10 W.	6	1a, 7.....	7	30.01	S.....	S, 8.....	SE.....	SE, 8.....	WSW-NNW.
Nishmaba, Am. S. S.	Hull.....	Port Tampa.....	46 33 N.	14 06 W.	8	10a, 8.....	8	29.38	W.....	WNW, 8.....	NW.....	NW, 8.....	WSW-NNW.
Roslin Castle, Br. M. S.	Las Palmas.....	Southampton.....	29 30 N.	13 00 W.	11	4a, 11.....	12	29.97	NE.....	NE, 8.....	NNE.....	NE, 9.....	WSW-W.
Tampa, Am. M. S.	Gibraltar.....	New York.....	42 04 N.	31 27 W.	15	Noon, 15.....	16	29.86	W.....	W, 5.....	NW.....	W, 8.....	SSW-W.
Lossiebank, Br. M. S.	Cape Town.....	Boston.....	39 12 N.	67 30 W.	15	7p, 15.....	15	29.78	WSW.....	WSW, 8.....	WSW.....	WSW, 8.....	SSW-W.
Exermont, Am. S. S.	Lisbon.....	New York.....	41 34 N.	20 00 W.	16	4a, 16.....	16	29.78	SSW.....	W, 5.....	NW.....	W, 8.....	SSW-W.
Belgian Gulf, Belg. M. S.	Flushing.....	Port Arthur.....	46 10 N.	17 52 W.	16	5p, 16.....	17	29.49	WSW.....	WSW, 4.....	NNW.....	NNW, 9.....	SSW-WSW-NNW.
Seatrail New York, Am. S. S.	New York.....	New Orleans.....	32 18 N.	75 42 W.	17	7a, 17.....	17	29.97	SW.....	SW, 5.....	W.....	W, 8.....	SW-W.
West Harshaw, Am. S. S.	Avonmouth.....	do.....	49 16 N.	12 20 W.	17	10a, 17.....	17	29.30	NW.....	NW, 2.....	NW.....	NW, 9.....	SE-NW.
Laurent Meeus, Belg. M. S.	Houston.....	Amsterdam.....	40 17 N.	56 37 W.	19	10a, 19.....	19	29.46	S.....	SW, —.....	SW.....	SW, 9.....	S-SW.
Tampa, Am. M. S.	Gibraltar.....	New York.....	42 45 N.	56 55 W.	20	8p, 20.....	20	29.68	SSE.....	SSE, 9.....	SW.....	SSE, 9.....	SSE-SW.
Geo. H. Jones, Am. S. S.	Baltimore.....	Guirra.....	19 00 N.	63 49 W.	21	4p, 21.....	22	29.93	ENE.....	ENE, 7.....	ESE.....	ENE, 7.....	SSW-W.
Yselhaven, Du. S. S.	Antwerp.....	Norfolk.....	49 55 N.	9 25 W.	22	8a, 23.....	24	29.49	SW.....	WSW, 8.....	W.....	W, 9.....	SSW-W.
Exermont, Am. S. S.	Lisbon.....	New York.....	40 38 N.	67 13 W.	25	8a, 26.....	25	29.69	S.....	W, 2.....	S.....	SSW, 8.....	WSW-WNW.
Helmstrath, Br. S. S.	Quebec.....	London.....	53 30 N.	26 39 W.	26	Noon, 26.....	27	29.60	SW.....	WNW, 7.....	NW.....	NW, 8.....	W-S.
Tillie Lykes, Am. S. S.	Galveston.....	Port au Prince.....	22 58 N.	79 04 W.	28	4a, 28.....	28	29.89	S.....	W, 3.....	SE.....	S, 6.....	N-WNW.
Yaka, Am. S. S.	Antwerp.....	Tampa.....	26 00 N.	76 50 W.	27	7a, 28.....	29	29.88	SE.....	SE, 6.....	SSE.....	S, 9.....	N-WNW.
Turrialba, Am. S. S.	Boston.....	Havana.....	26 20 N.	79 19 W.	28	6p, 28.....	29	29.75	ENE.....	ESE, 9.....	SSW.....	ESE, 9.....	N-WNW.
City of Omaha, Am. S. S.	Hamburg.....	Tampa.....	25 00 N.	80 10 W.	28	7p, 28.....	30	29.61	NE.....	NW, 10.....	S.....	NW, 10.....	N-WNW.
Atenas, Am. S. S.	Tela.....	Charleston.....	25 21 N.	80 00 W.	28	7p, 28.....	28	29.38	NNW.....	SE, 8.....	SSE.....	SE, 8.....	NNW-SSE.
Tillie Lykes, Am. S. S.	Port au Prince.....	Ciudad Trujillo.....	17 34 N.	72 20 W.	31	4p, 31.....	31	29.89	E.....	ESE, 6.....	NE.....	ESE, 6.....	E-ESE-E.
NORTH PACIFIC OCEAN													
Washington, Am. S. S.	Longview.....	Shanghai.....	35 59 N.	153 02 W.	5	2a, 6.....	6	29.93	SW.....	WSW, 8.....	W.....	SSW, 9.....	SSW-WSW.
Barentsz, Du. S. S.	Maunalei, Am. S. S.	San Francisco.....	37 30 N.	123 42 W.	13	2p, 14.....	14	29.87	N.....	W, 6.....	SW.....	NW, 12.....	NNW-W-S.
Washington, Am. S. S.	Longview.....	Shanghai.....	47 15 N.	158 45 E.	15	2p, 15.....	15	29.71	S.....	SSW, 8.....	W.....	SW, 8.....	S-WSW.
Pres. Jefferson, Am. S. S.	Yokohama.....	Victoria, B. C.....	48 08 N.	174 57 E.	19	Mdt, 18.....	18	29.84	SE.....	E, 5.....	SE.....	SE, 8.....	SE-S-SW.
Silverpaw, Br. M. S.	Los Angeles.....	Manila.....	15 00 N.	131 25 E.	18	4a, 19.....	19	29.64	E.....	SE, 8.....	SW.....	SE, 8.....	ESE-Var-SW.
Laganbank, Br. M. S.	San Francisco.....	do.....	15 54 N.	128 16 E.	19	8a, 19.....	19	29.62	SW.....	SW, 5.....	SW.....	SW, 8.....	

1 Barometer uncorrected.

2 August.

3 Position approximate.

NORTH PACIFIC OCEAN, JULY 1936

By WILLIS E. HURD

Atmospheric pressure.—The distinctive feature of the pressure situation over the North Pacific Ocean during July 1936 was the great extent of the oceanic high from the northwestern coast of the United States southwestward to a considerable distance beyond Midway Island, and from the Hawaiian Islands to the sixtieth parallel in the southeastern part of the Bering Sea. The pressure

departure from normal at Dutch Harbor was +0.15, and at St. Paul, +0.22, as shown in table 1. Except in the Aleutian region, barometers over the high-pressure area were not far from normal.

Over the extreme southeastern part of the ocean, pressures below normal occurred, the departure being -0.12 at Juneau. Pressures were slightly below normal along the American coast to the southward.

In Asiatic waters, from northern Japan southwestward, average barometric readings were below 29.80 inches

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, July 1936, at selected stations

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Point Barrow	29.72	-0.20	30.28	27	29.12	9
Dutch Harbor	30.09	+ .15	30.36	18	29.34	1
St. Paul	30.06	+ .22	30.44	20	29.40	5
Kodiak	29.93	— .01	30.22	18	29.48	9
Juneau	29.93	— .12	30.24	31	29.42	9
Tatoosh Island	30.04	— .01	30.23	29	29.68	4
San Francisco	29.89	— .06	30.00	11	29.74	14
Mazatlan	29.83	— .03	29.92	29	29.66	14
Honolulu	30.02	— .00	30.12	31	29.92	15
Midway Island	30.10	— .01	30.20	23	29.98	13, 14
Guam	29.83	— .01	29.94	6	29.74	13, 16
Manila	29.74	— .00	29.88	8	29.62	17, 29
Hong Kong ¹						
Naha	29.76	+ .04	29.96	7	29.52	20, 21
Chichishima	29.91	+ .06	30.04	16, 17	29.56	10
Urakawa	29.78		30.20	6	29.42	11

¹ Data missing.

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Cyclones and gales.—North Pacific weather in higher latitudes was for the most part quiet in July 1936. A few extratropical disturbances occurred; but only a small number was reported as causing winds of gale intensity, and these on only 5 days. The American steamship *Washington* was the only vessel to report a gale in excess of force 8. This was of force 9, encountered during the night of the 5th–6th, lowest barometer 29.93, in the neighborhood of 52° N., 153° W.

Tropical disturbances.—Subjoined is a report, by the Reverend Bernard F. Doucette, S. J., of the Philippine Weather Bureau, on five typhoons and one depression that occurred in the Far East during July 1936.

There is little to add to this account beyond a mention, in connection with the typhoon of July 16–25, of the fact that two vessels, the British motorships *Laganbank* and *Silveryew*, reported encountering gales of force 8 on the 19th within the neighborhood 15°–16° N., 128°–132° E.

Fog.—Along the northern steamship routes fog was frequent to the westward of the one hundred and sixtieth meridian of west longitude, the occurrence increasing from about 20 percent in the eastern area to about 70 percent in the neighborhood of northern Japan. As an illustration of the persistence of fog in the trans-Pacific travel of the month: The American S. S. *President Jefferson* entered fog at 3 p. m. of the 15th, in 38°13' N., 145°43' E., and did not leave it until 4 p. m. of the 18th in 47°30' N., 171°36' E. There were 13 days with fog reported off the California coast; and 9 days off the coast of Lower California.

TYPHOONS AND DEPRESSION OVER THE FAR EAST, JULY 1936

By REV. BERNARD F. DOUCETTE, S. J.

[Weather Bureau, Manila, P. I.]

Five typhoons and one depression occurred during the month of July 1936 over the Philippines and adjoining regions.

Typhoon, July 1 to 5, 1936.—A typhoon appeared the morning of July 1 about 400 miles east of southern Samar and moved west-northwest toward northern Luzon, which was in danger until the forenoon of July 3. The storm then shifted to the north, afterward northwest, and moved rapidly across the Balintang Channel. It entered the continent close to Swatow the morning of July 5 and soon changed its course to the east. By this time it had

weakened considerably and on the following morning had disappeared. The typhoon was small and the winds were not violent over northern Luzon, July 3, consequently little damage resulted.

Typhoon, July 5–10, 1936.—From July 2 to 4, pressure was low over the Eastern and Western Caroline Islands; but no definite center appeared until July 5, when the morning weather map showed the existence of a depression about 200 miles north-northeast of Yap. During the next 2 days the depression moved west-northwest quite rapidly, intensifying as it progressed. The morning of July 8 found it about 300 miles east-northeast of Manila moving west-northwest. It passed north of and close to Tuguegarao, Cagayan Province, the afternoon of the same day. The next morning, the typhoon was over the northern part of the China Sea, much decreased in intensity, and moving northward toward the Continent, which it entered July 10.

The location of the typhoon on the morning of July 8 was known from observations sent to the Observatory by Captain Weber of the S. S. *Barentsz*. His ship encountered the typhoon winds and rain and passed through the center (9:20 to 9:30 a. m., position at 9 a. m. lat. 16.32 long. 123.44) with a barometric minimum of 727.7 mm (28.650 in.). The pressure had fallen from 750.0 mm (29.528 in.) to this value in about 1 hour (8.25 a. m. to 9:20 a. m.) and regained the higher value at 10:30 a. m. The winds were of hurricane force but there was no warning swell in advance of the typhoon. The evidence obtained by the officers of the ship plainly indicates that the typhoon was very small, with the destructive winds extending only over a small area. At Tuguegarao, Cagayan Province, a barometric minimum of 742.46 mm (29.270 in.) was observed July 8, 5:16 p. m.

Two people were crushed by falling trees near Tuguegarao. The M. S. *Marie* was lost 8 or 10 miles south of Palinan along the eastern coast of Luzon. (Palinan Point is in lat. 17.10 N, long. 122.27 E). The crew, reported to be 26 in number, and 2 passengers were lost with the ship, according to newspaper reports, July 22.

Typhoon, July 16 to 25, 1936.—A depression appeared, July 16, about 200 miles west-northwest of Yap, moved west-northwest, gradually inclining to the north, passing over 300 miles east of the Philippines. When east of Formosa (July 21), it intensified and was a severe disturbance as it crossed the Loo Choos (Nansei) Islands about 50 miles west of Naha. It gradually recurved to the northeast, passing close to Kiushu Island on its way to and across the Sea of Japan. Thence it moved rapidly across northern Japan toward the Aleutian Islands. The newspapers of July 24 reported 4 deaths in Japan, many fishing boats lost, and certain districts flooded, with greatest damage at Kagoshima. The navy service ship, *Mamiya*, and the submarine *S-55* were beached near Sasebo, with some damage.

Typhoon, July 18 to 21, 1936.—A depression appeared about 300 miles west by south of Manila on July 18 and moved slowly in a northwesterly direction. On the 19th and 20th it intensified into a typhoon, which continued toward Hainan Island, but changed to the west when close to and south of the island. It entered Indochina, moving westerly, and gradually decreased in intensity.

It is to be noted that this typhoon, west of the Archipelago, and the preceeding typhoon, east of the Archipelago, were phenomena along the front extending from Indochina to the Caroline Islands. Both of these typhoons intensified within a day of each other, the one in the China Sea on the 19th, the Pacific disturbance on the 20th. Observations received from the S. S. *Kota Agoeng*